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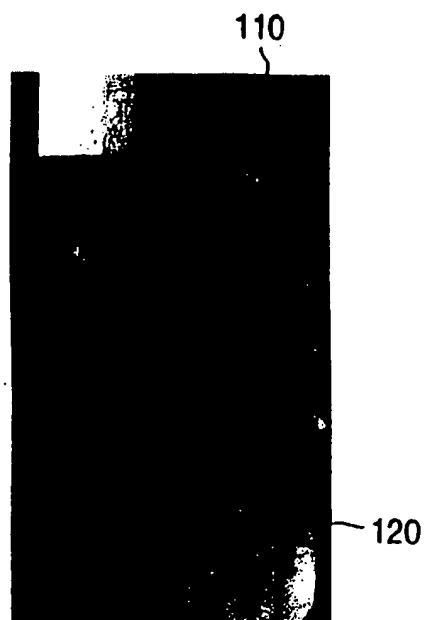


FIG. 1

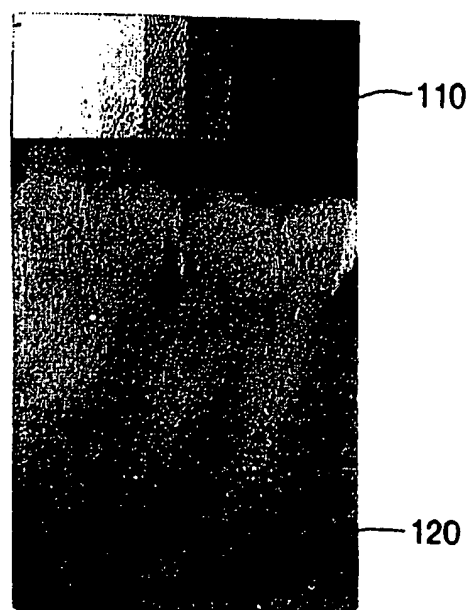


FIG. 2

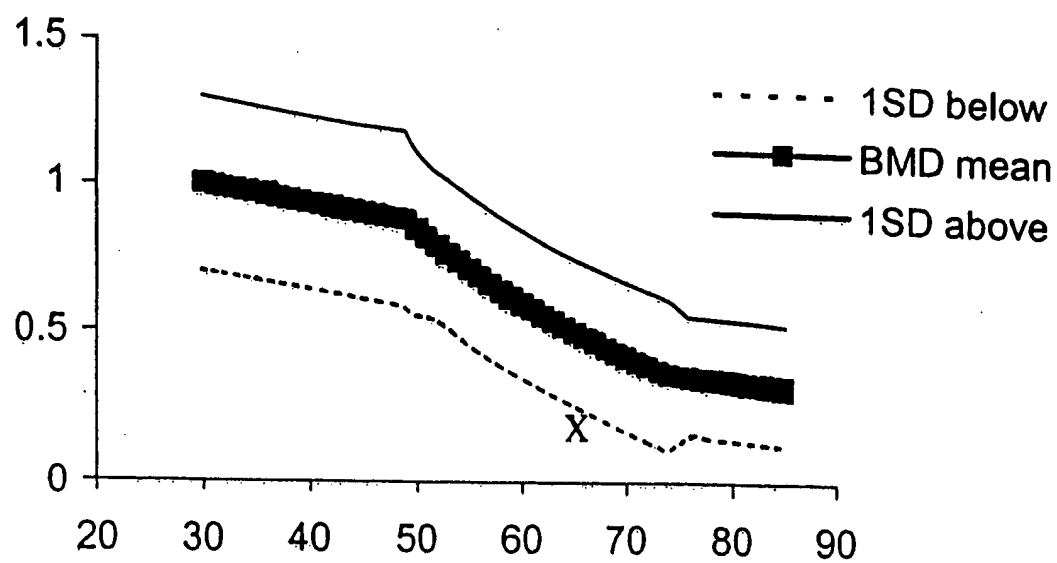
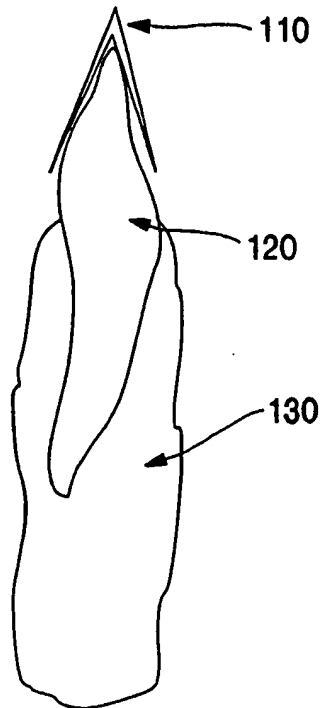
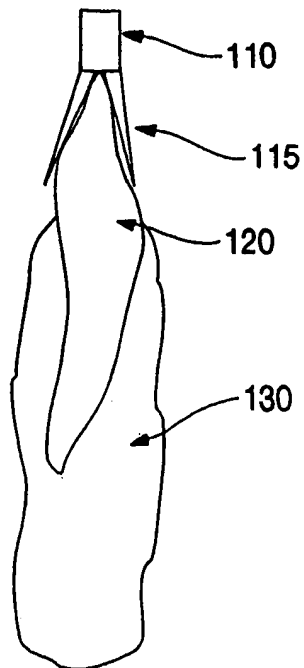


FIG. 3



**FIG. 4**



**FIG. 5**

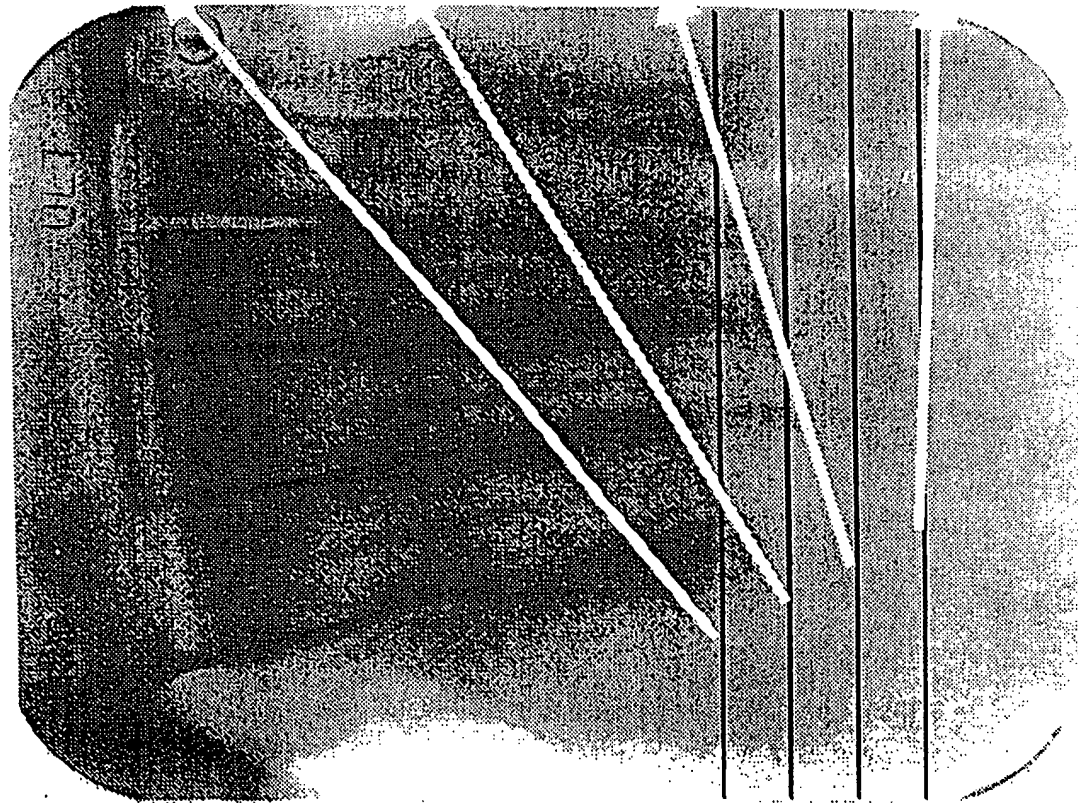
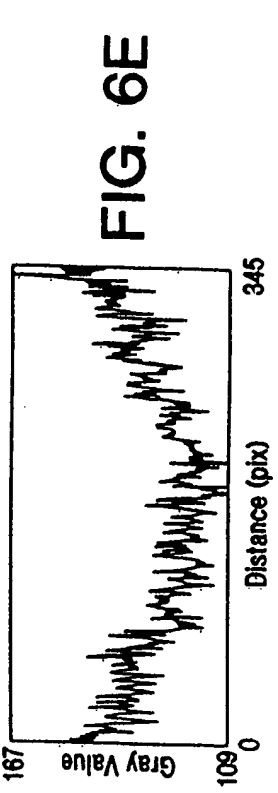
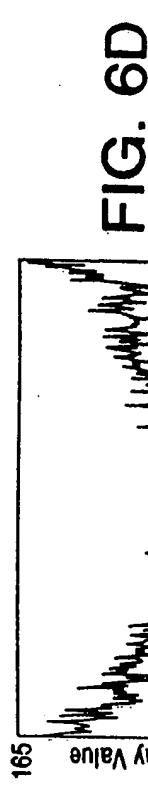
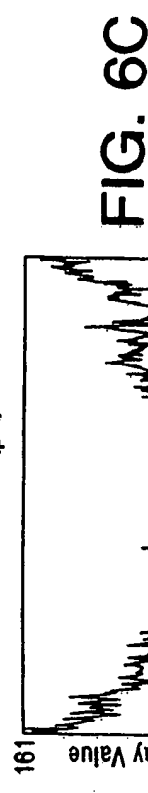
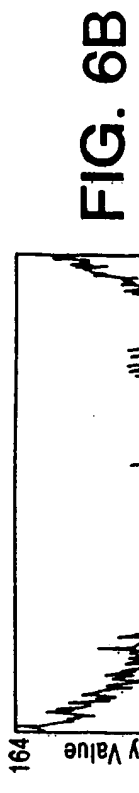


FIG. 6A



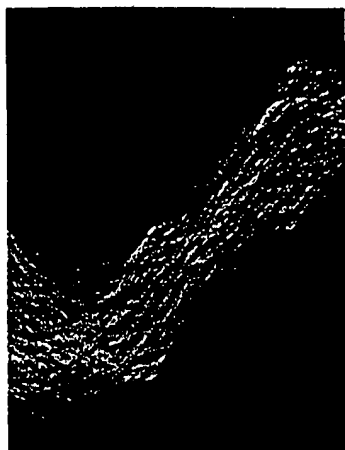


FIG. 7A

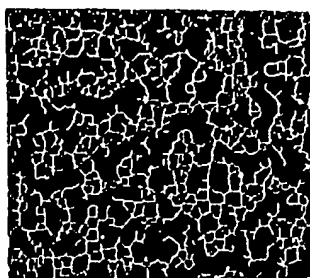


FIG. 7B

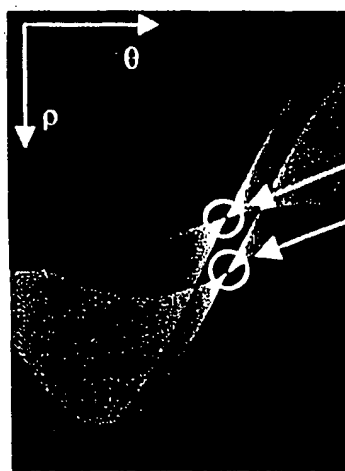


FIG. 8A

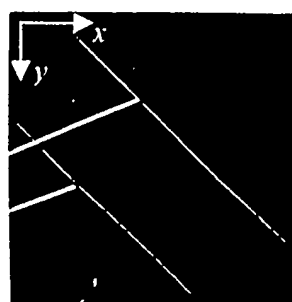


FIG. 8B

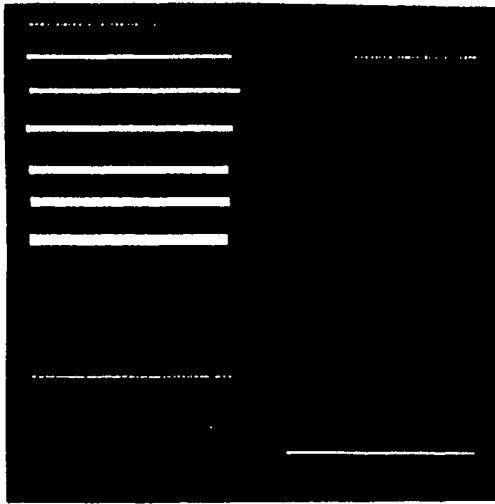


FIG. 9



FIG. 10A

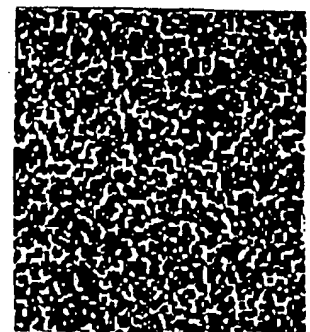


FIG. 10B

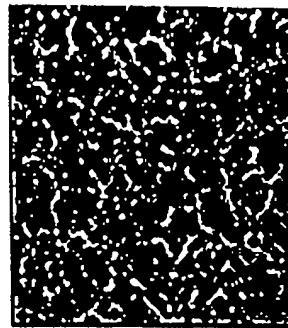


FIG. 10C

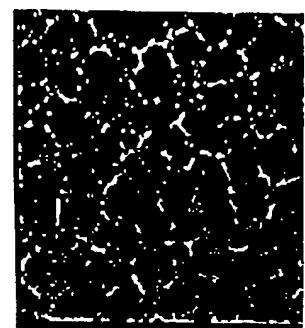


FIG. 10D

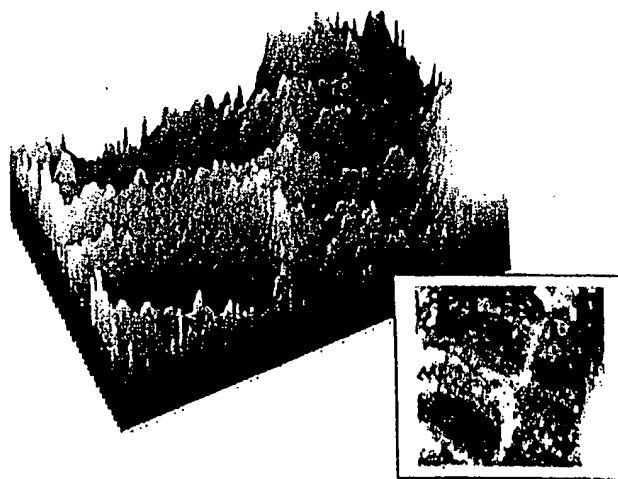


FIG. 11

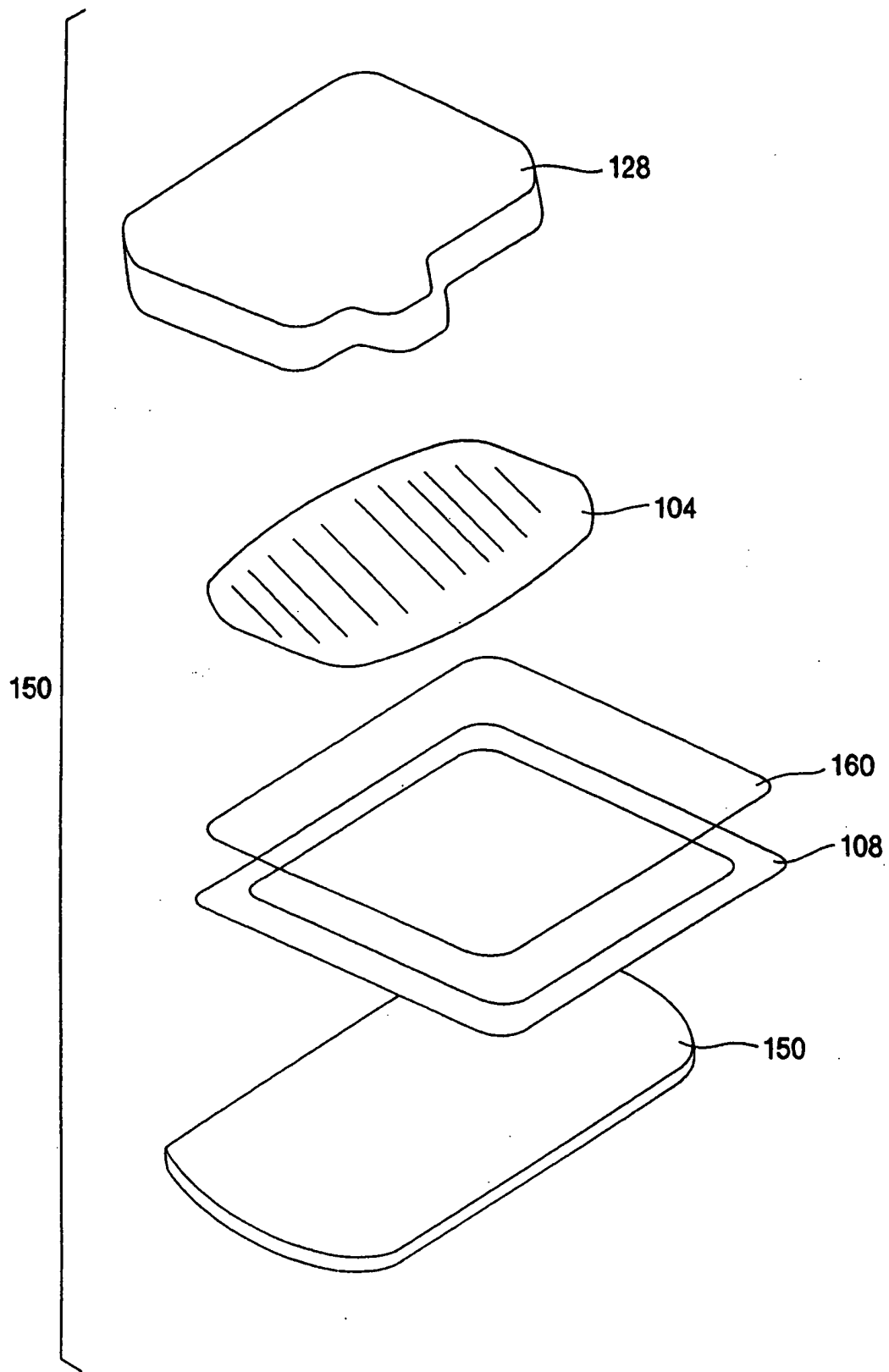


FIG. 12

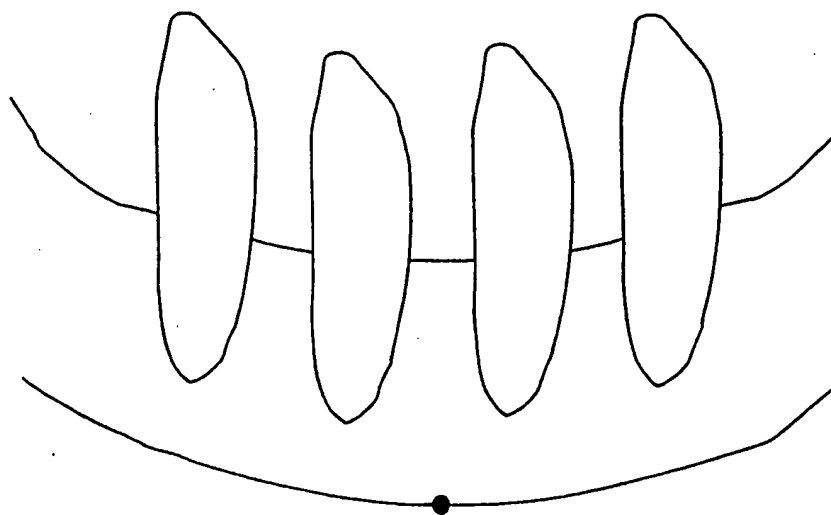


FIG. 13

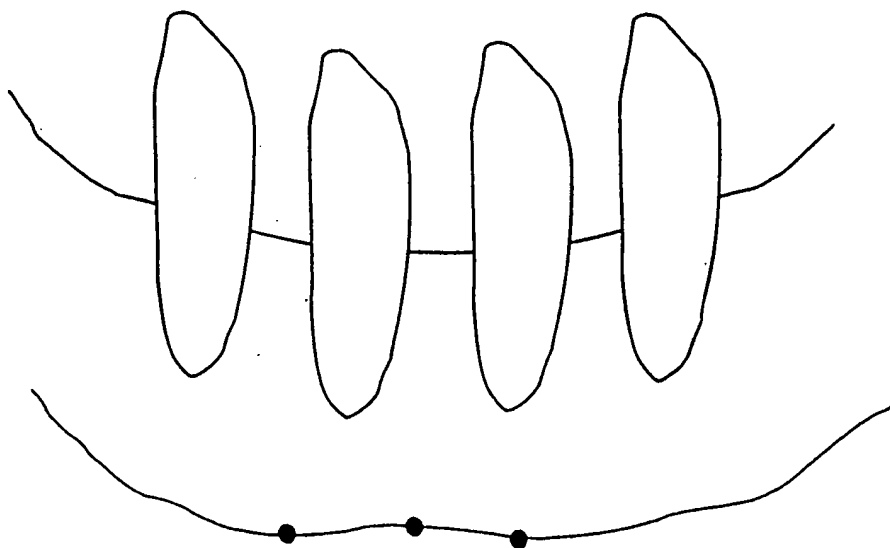


FIG. 14



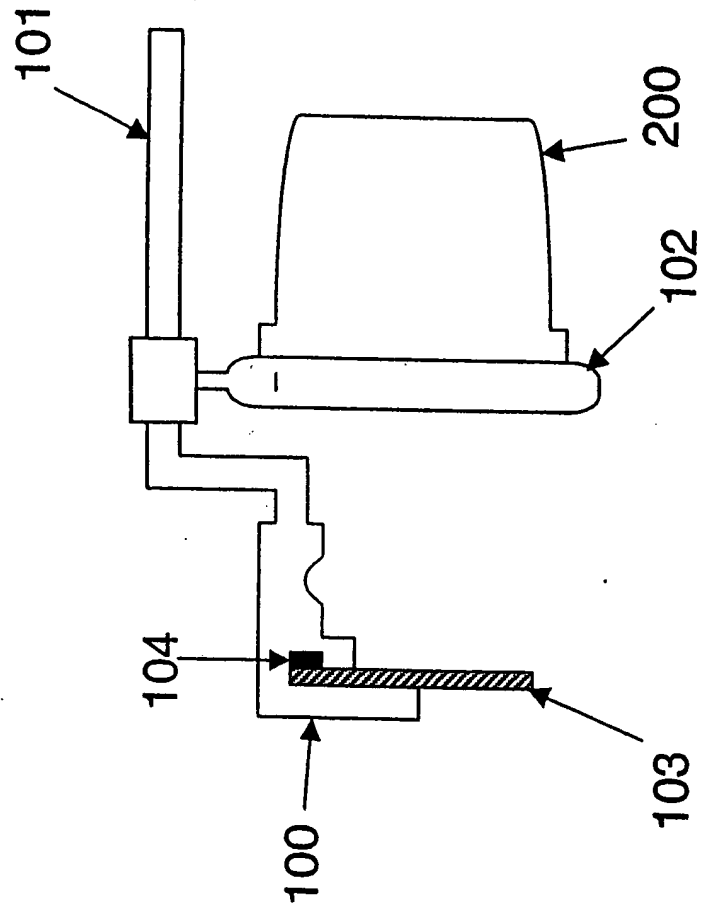


FIGURE 15

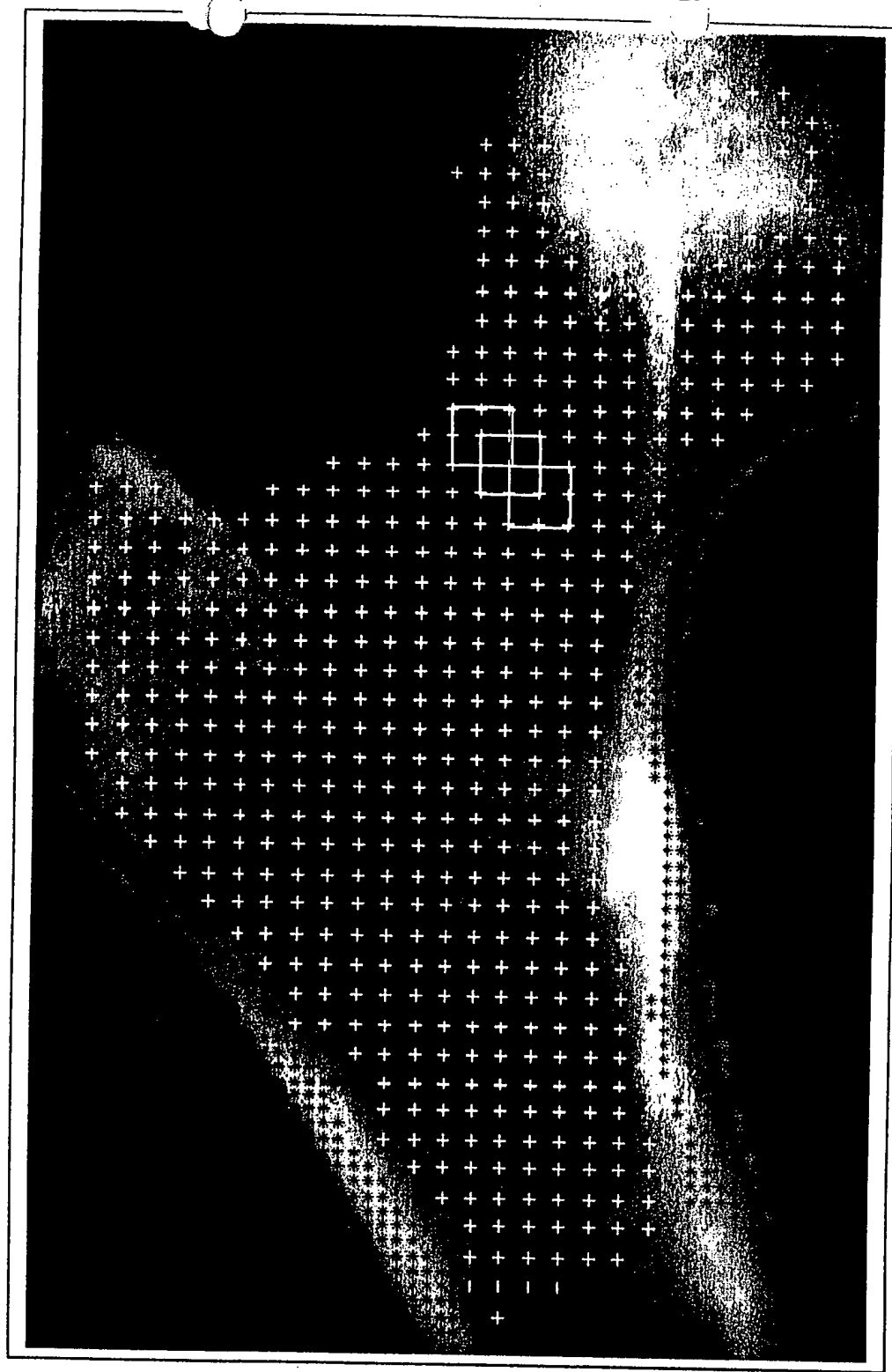


Figure 16. An example of a regular interval sampling field for microarchitecture (+) and a higher density sampling field for macro-anatomical features(\*) on a femur radiograph. White rectangles are examples of overlapping window positioning.

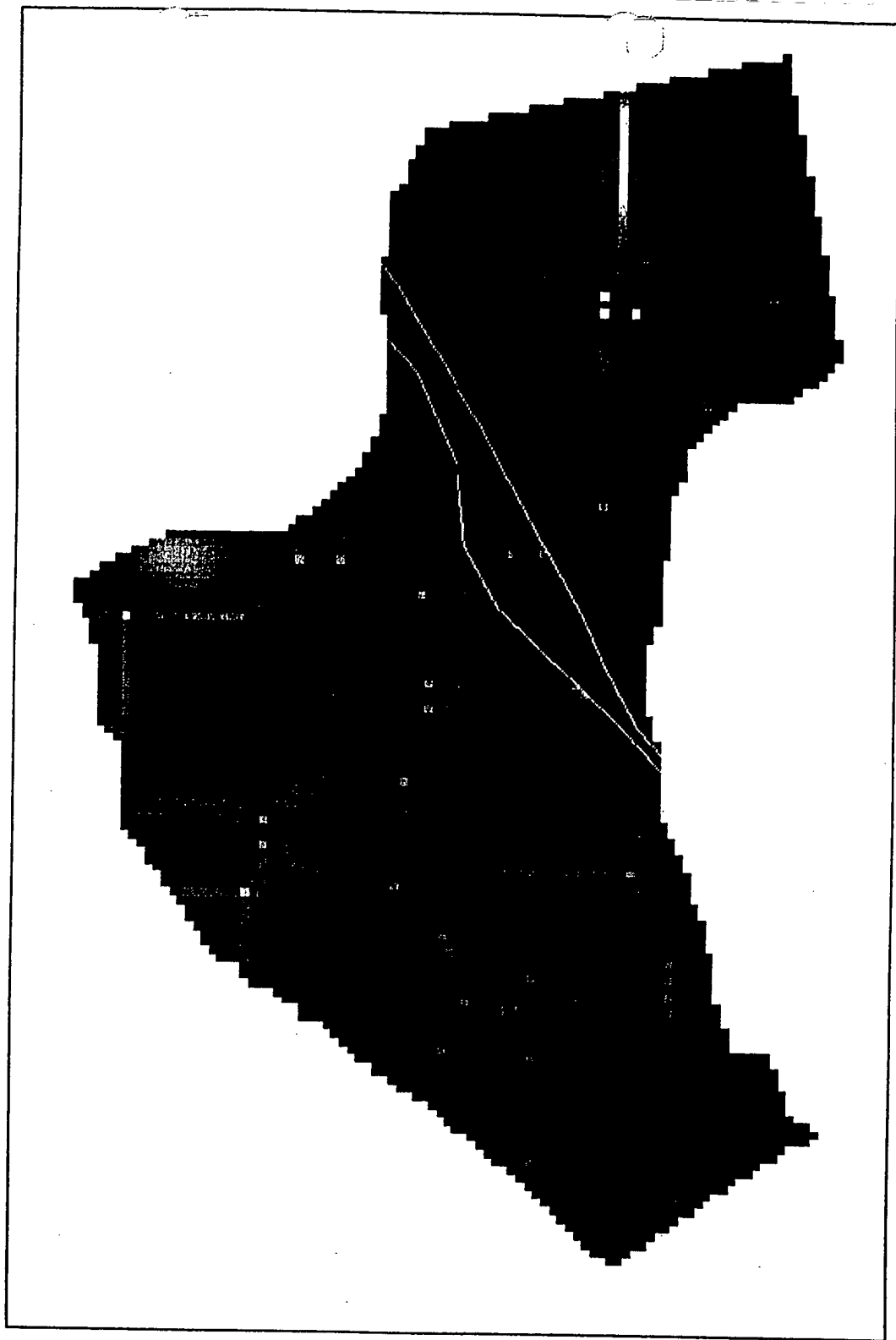


Figure 17. Watershed segmentation boundaries superimposed on a parameter map. The two white lines are the actual fracture paths resulted from an in-vitro mechanical loading test.

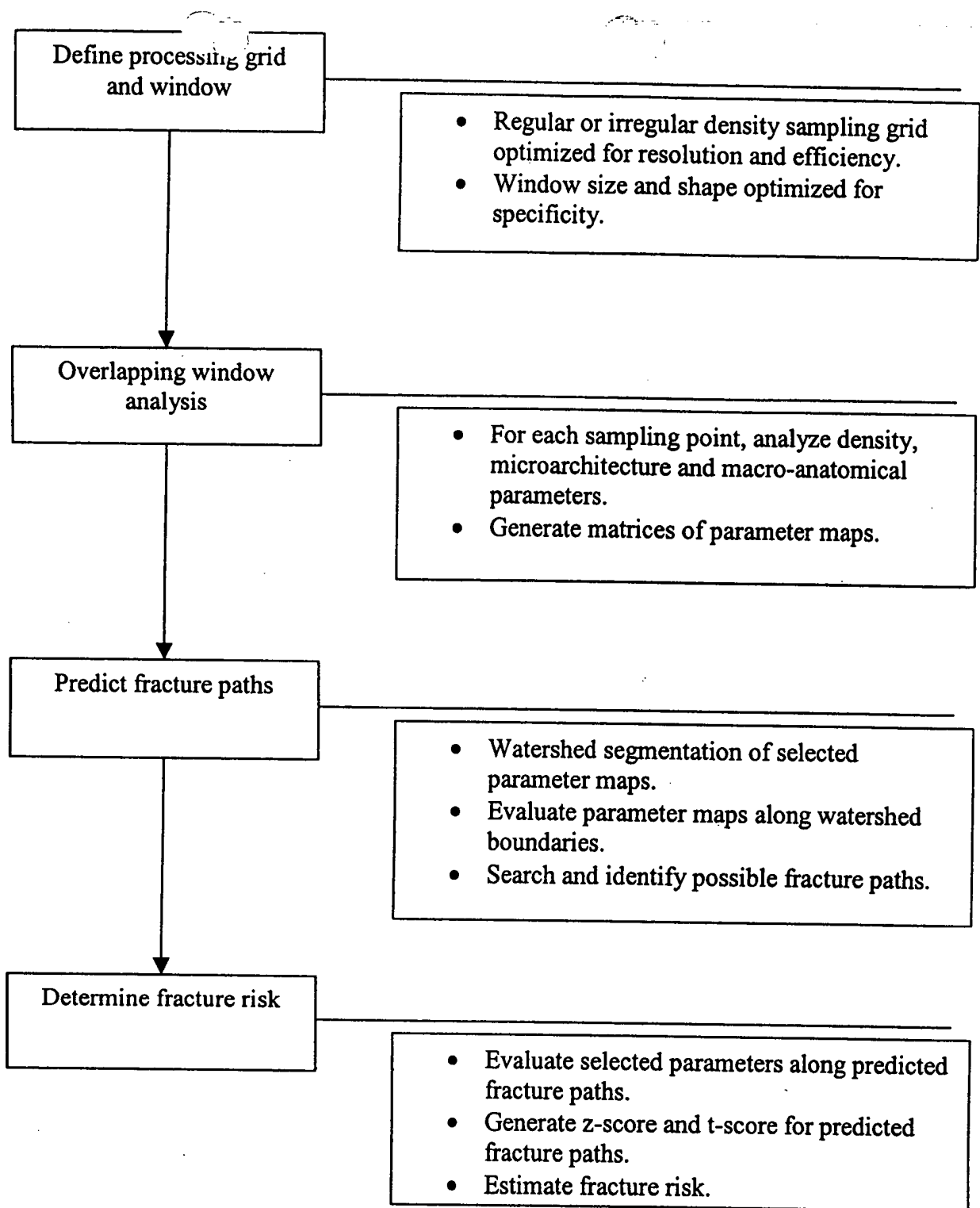
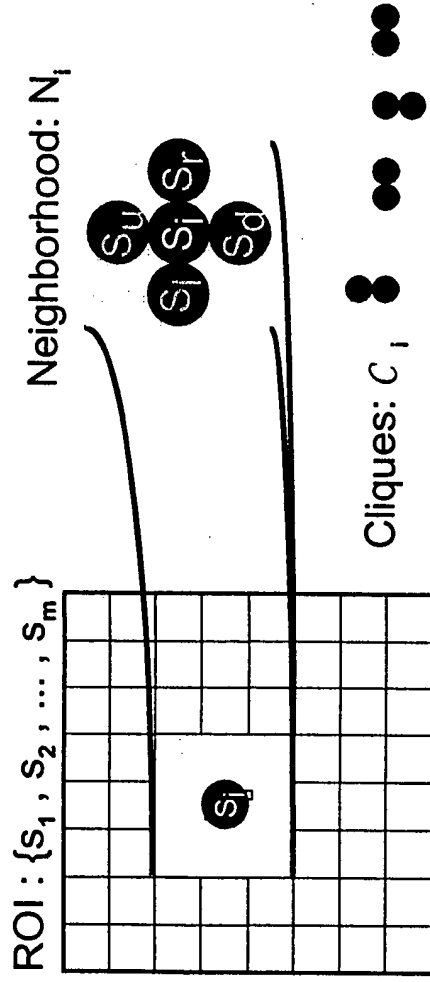


Figure 18. Process to determine fracture risk using overlapping window processing and fracture paths prediction.



$S_i: \{F1i, F2i, \dots, Fni\} \rightarrow$  feature set at site  $S_i$

Joint distribution of feature set given neighboring sets:

$$P(s_i | s_k, s_k \in ROI) = P(s_i | s_k, s_k \in N_i)$$

Figure 19

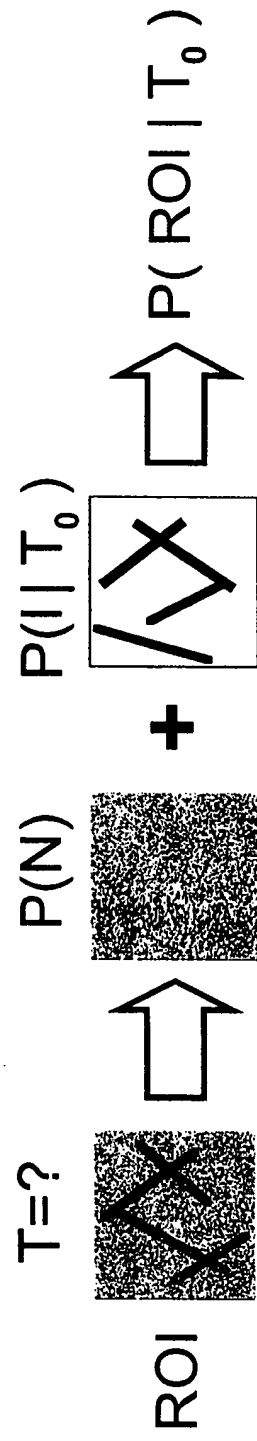


IMAGE (I)  
PRIORS

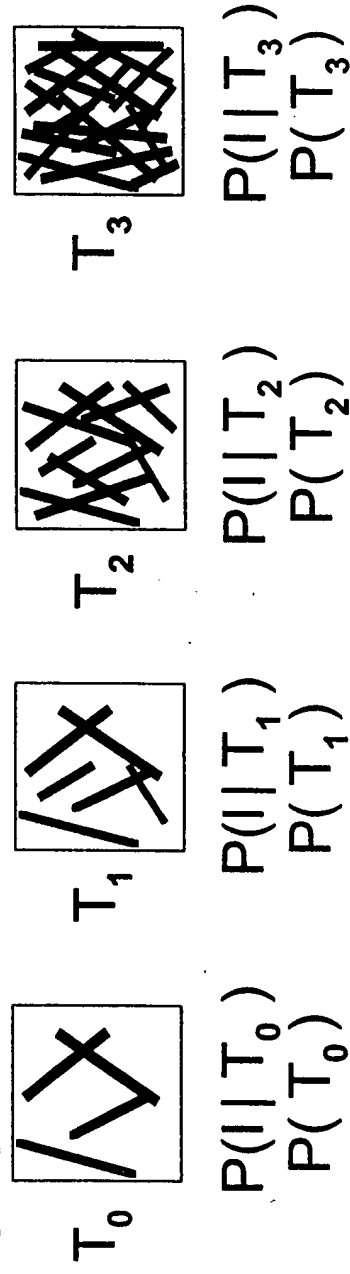


Figure 20

A posteriori density distribution

$$P(T_i | ROI) = \frac{P(ROI | T_i) P(T_i)}{P(ROI)}$$

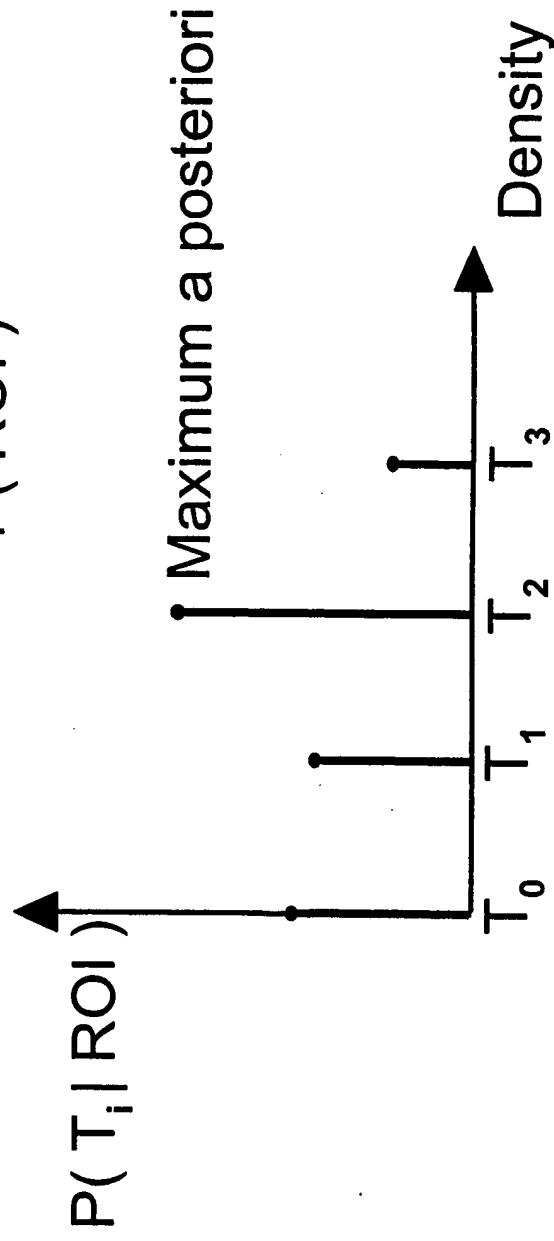


Figure 21

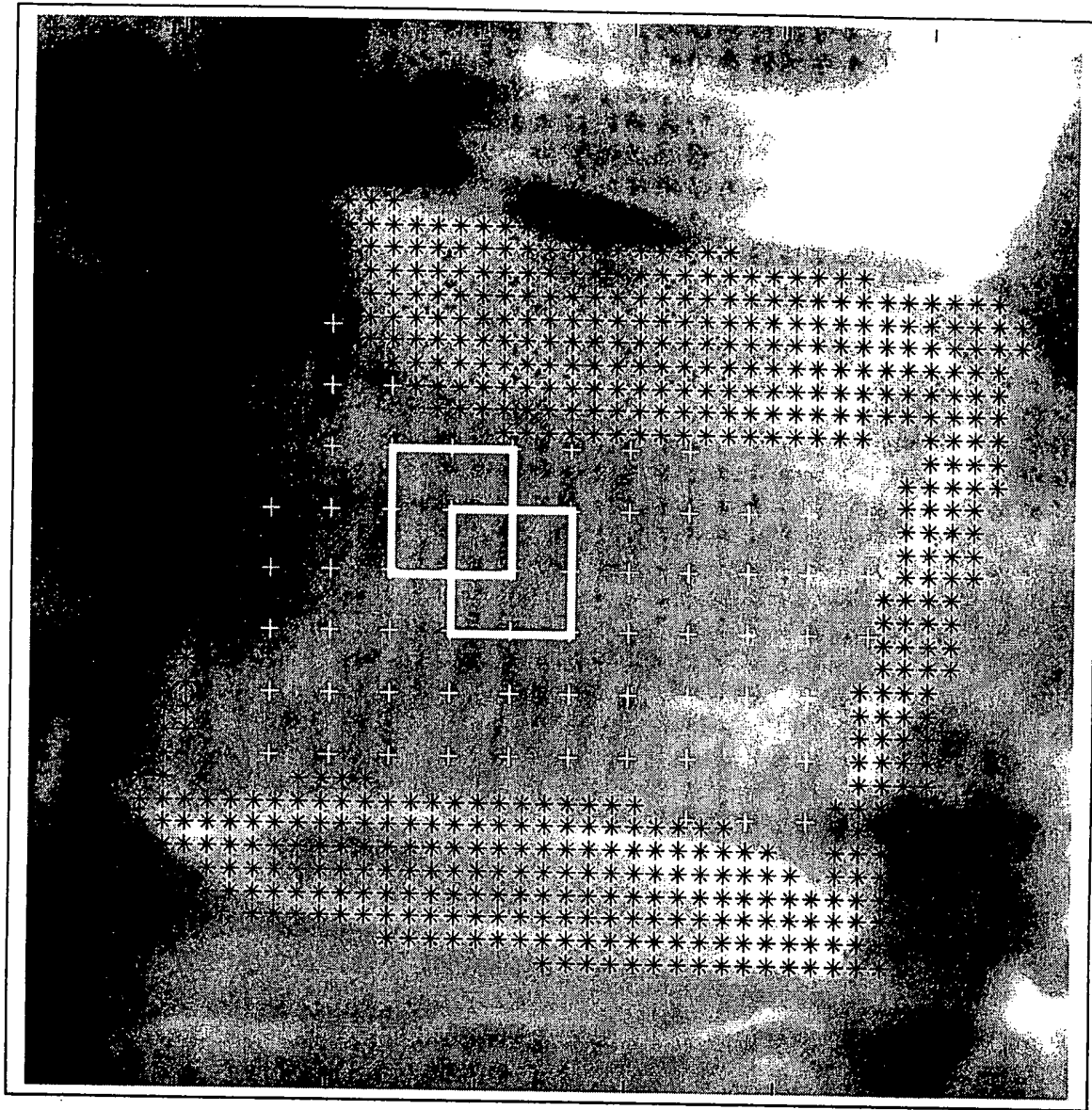


Figure 22



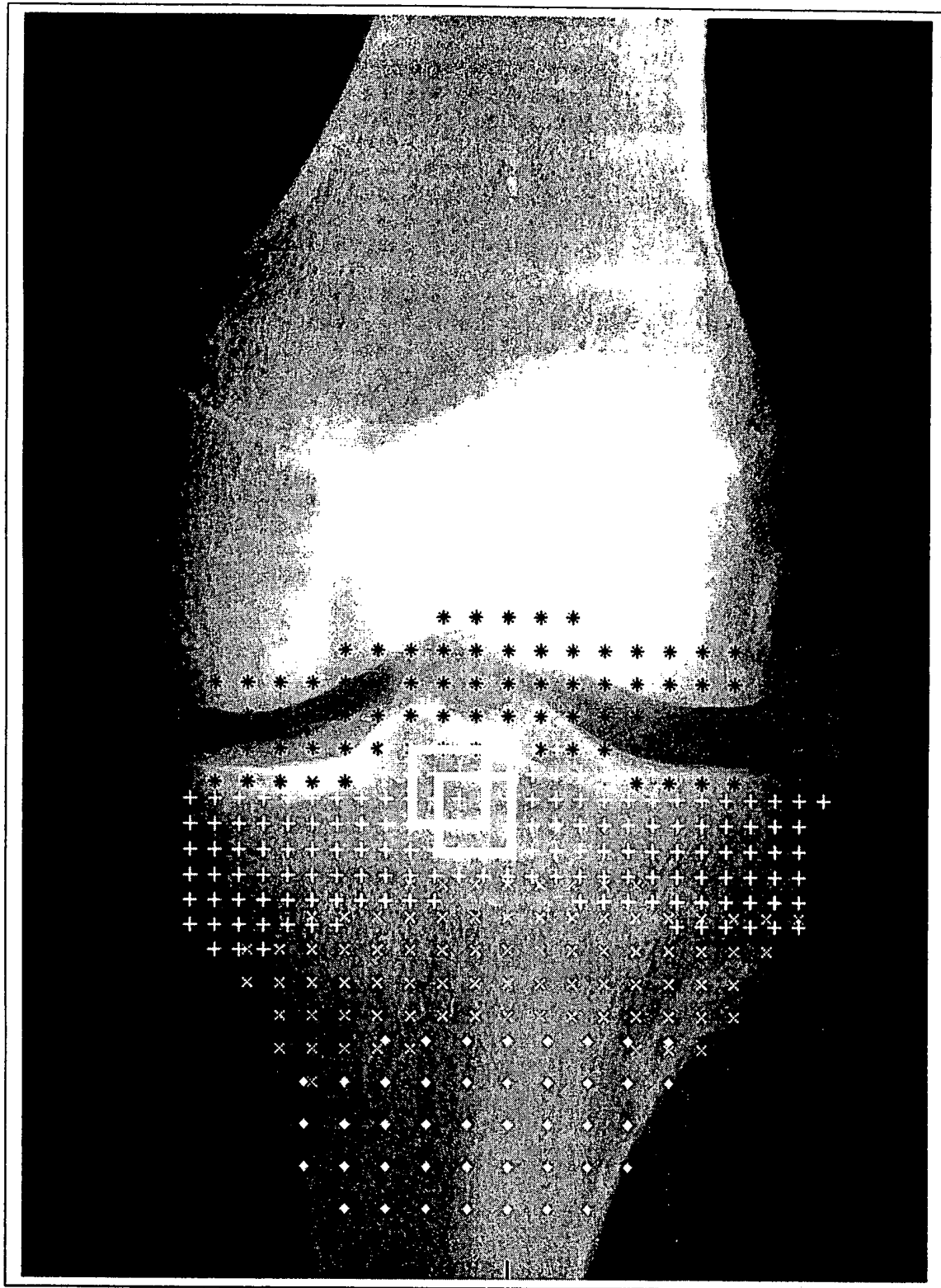
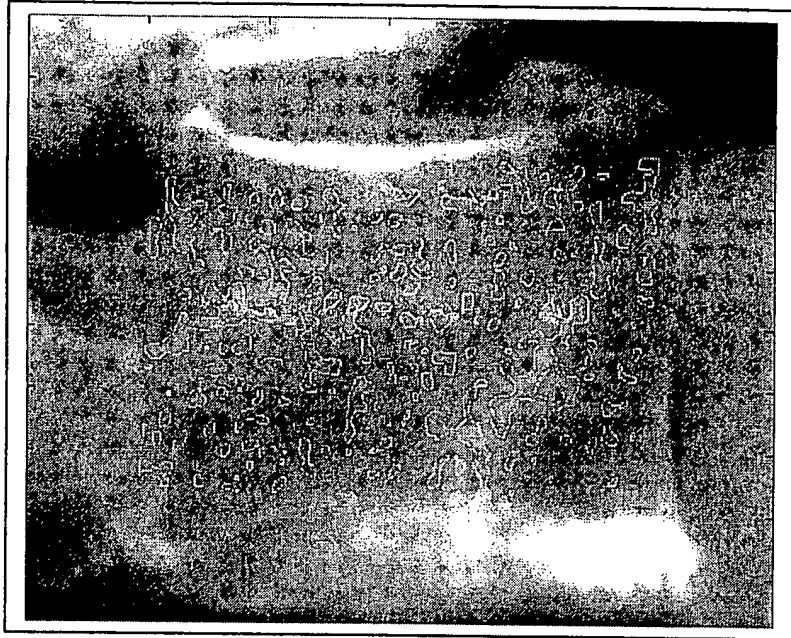
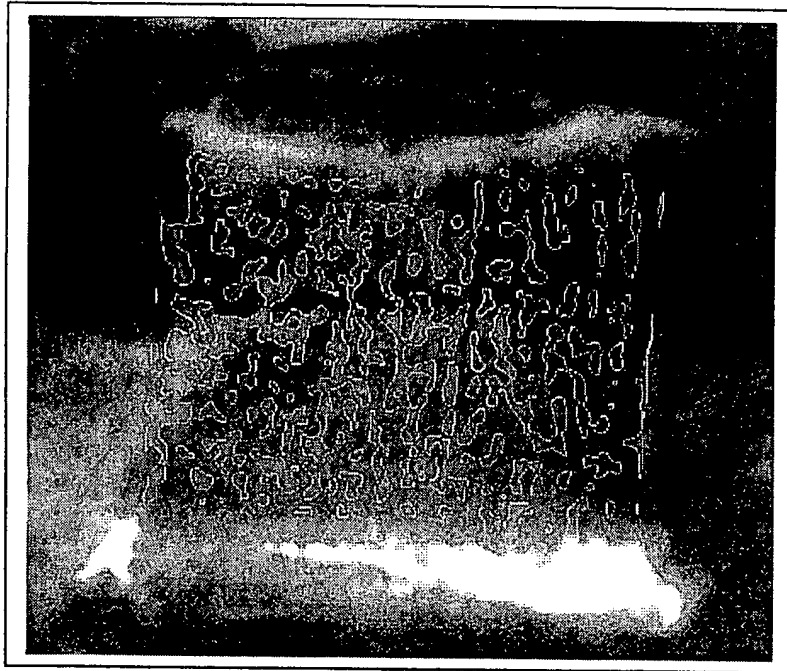


Figure 23



(a)



(b)

Figure 24